



**MULTICYCLE INTEGRATION FOCAL PLANE ARRAY (MIFPA) FOR
LOCK-IN (LI-), GATED (G-), AND GATED LOCK-IN (GLI-) IMAGING,
SPECTROSCOPY AND SPECTROSCOPIC IMAGING**

(75) Inventors: **Ken K. Chin**, Pine Brook, NJ (US);
Haijiang Ou, Harrison, NJ (US)

(73) Assignee: **CF Technologies, Inc.**, Pine Brook, NJ (US)

(21) Appl. No.: 09/973,710

(22) Filed: October 9, 2001

(51) Int. Cl.

(52) U.S. Cl.

(58) **Field of Search**

(56) **References Cited**

U.S. PATENT DOCUMENTS

6,630,669 10/2003

(57) **ABSTRACT**

A new electronic apparatus multicycle integration focal plane array (MIFPA) is disclosed, wherein through correlated multicycle integration extremely weak signals buried in strong background can be detected for imaging, spectroscopy, and/or spectroscopic imaging applications. The MIFPA apparatus can operate in three modes — the lock-in (LI), gated (G), and gated lock-in (GLI) modes. The methods of operating LI-MIFPA, G-MIFPA, and GLI-MIFPAP modes comprising specific steps are also disclosed.